FY 2014 LDRD Projects

Division	Project Title	PI	Total Allocation
AF	Towards the Development of a Fiber Based Laser Plasma Accelerator (LPA) and Assessment of its Utility for Potential Biomedical Applications	Leemans,Wim P	$336,000
AF	Probing Point Defect Dynamics in Solids with Short Ion Beam Pulses	Schenkel,Thomas	$296,000
AF	High-accuracy Scalable Solvers for Modeling of Future Ultrafast Photon Sources	Vay,Jean-Luc	$302,000
AL	Magnetic-Field-Induced and Transient Quantum Phases in Correlated Materials	Arenholz,Elke	$262,000
AL	Ultra-high Resolution Microscopy of Nano-materials by Scanning X-ray Diffraction Microscopy	Shapiro,David Alexander	$196,000
AL	Novel Accelerator Techniques for Diffraction Limited Light Sources	Steier,Christoph Andreas	$1,095,000
AL	Next generation Gratings for Spectroscopy and Pulse Manipulation	Voronov,Dmytro L	$304,000
CH	Probing Ultrafast Dynamics with Multi-color, Multi-pulse Laser and Synchrotron Photons	Ahmed,Musahid	$306,000
CH	Design of Mesoscale Catalyst Networks	Hartwig,John	$445,000
CH	New Algorithms for Performing and Analyzing Large-scale Electronic Structure Calculations	Head-Gordon,Martin	$297,000
CH	Designing Fluctuations and Dynamics of Enzyme Catalytic Networks	Head-Gordon,Teresa Lyn	$216,000
CH	Computational-Experimental Studies of Aerosol Transformations from the Liquid to Glassy State	Wilson,Kevin R	$199,000
CR	Graph-based Analysis and Visualization of Multimodal Multi-resolution Large-scale Neuroimaging Data.	Buluc,Aydin	$365,000
CR	Advanced Computational Chemistry and Semantic Data Tools for Mesoscale Science	de Jong,Wibe Albert	$322,000
CR	An Optimization-based Strategy for Computational Design of Nanoporous Carbon-Zero Materials	Haranczyk,Maciej	$169,000
CR	High-Performance Parallel Graph-Analysis for Key Genomics Computations	Oliker,Leonid	$376,000
CR	Numerical Methods for Multiple Evolving Interfaces	Saye,Robert	$97,000
CR	Interlinkage of Cross-Disciplinary Mathematical Technologies	Sethian,James A	$534,000
CR	Modeling Subsurface Reactive Transport Processes from Mineral-to-Pore-to-Continuum	Trebotich,David Paul	$260,000
CR	SPOT Suite - Towards an End-to-End Solution for Light Source Data	Tull,Craig	$368,000
CR	Quantitative Image Analysis for Computational Modeling	Ushizima,Daniela Mayumi	$150,000
CR	Numerical Algorithms and Mathematical Software for Computational Material Science and Chemistry	Yang,Chao	$107,000
CR	Computational approaches to understanding ultrafast science	Yang,Chao	$199,000
EE	LIGGT Clinic-in-a-Box	Buluswar,Shashi	$260,000
EE	Generative Design Methods for Integration of Energy and Sustainability in Early-Stage Architectural Design (Year 2)	Caldas,Maria Luisa de Oliveira Gama	$150,000
EE	Virtual Grid Integration Lab	Kiliccote,Sila	$522,000
EE	Stick-on Electricity Meters: Low Installed Cost Building Sub-Meters for Commercial and Industrial Energy Efficiency	Lanzisera,Steven M	$167,000
EE	Creating the vehicle-to-grid simulation (V2G-Sim) platform for predicting the impact and optimally integrating plug-in electric vehicles on the electricity grid	Saxena,Samveg	$228,000
EE	Integrated Assessment Capability for Sustainable Water-Energy Co-Management	Sohn,Michael D	$259,000
EE	Urban Scale Energy Grid Modeling	Wetter,Michael	$183,000
EE	A Novel Nanoscale Chemical Analysis System for Low-Cost Solar Materials	Zormpa,Vasileia	$182,000
EG	NanoReporter - an RF Powered, Nanoscale 3D Microelectronic Assembly for Mapping the Functional Connectome of the Brain	Grace,Carl R	$224,000
EG	Superconductor Undulators for Light Sources	Prestemon,Soren O	$301,000
ES	Developing a Mechanistic High-latitude Biological Soil Carbon and Nitrogen Cycle Module for Site, Regional and Global Land Models	Bouskill,Nicholas J	$152,000
ES	Integrative Mapping of Soil Heterogeneity at the Microbial Scale	Brodie,Eoin L	$594,000
ES	High-throughput Isolation and Functional Screening (HIFS) of Microbes Relevant to Today's Carbon Cycling and Bioenergy Needs.	Chakraborty,Romy	$118,000
ES	Tropical Forest Ecosystems Under a Changing Climate	Chambers,Jeffrey	$188,000
ES	Isotopic Probe of Ion Migration Processes in Li-ion Batteries	Christensen,John Neil	$144,000
ES	A Mesoscale Study of Hydrologic Properties of Shales	Kneafsey,Timothy J	$153,000
ES	Using Experiments and Numerical Models to Examine Ecosystem and Land Management Interactions With Atmosphere and Climate	Kueppers,Lara M.	$291,000
ES	Quantifying the Mesoscale Dynamics that Control Natural Organic Matter Conformation and Reactivity	Nico,Peter S	$240,000
ES	Nanoparticles-Stabilized Supercritical CO2 Foams: Developing Novel Microemulsions for CO2-Enhanced Oil Recovery	Wan,Jiamin	$189,000
GN	Modification of the Genetic Code to Construct a Safe Industrial Microbe for Synthetic Biology	Cheng,Jan-Fang	$170,000
GN	Development of Biosensors for High-throughput Functional Screening of Biosynthetic Pathways	Deutsch,Samuel	$111,000
GN	Function-Based Approaches for Distant-Acting Enhancer Discovery	Pennacchio,Len	$231,000
GN	Sequencing-based Functional Genomic in-vivo Characterization of Plant Promoters	Visel,Axel	$167,000

GN	Developing Epigenomic Technologies to Interrogate Genome Functions Relevant for Environment and Bioenergy	Wei,Chia-Lin	$161,000
GN	Development of a Cas9 Based Resource for Genome Engineering	Zhu,Yiwen	$322,000
LS	Integrated Imaging of Microbial Community Response to External Threats	Auer,Manfred	$472,000
LS	Reinventing Pre-clinical and Environmental Testing Paradigms	Brown,James Bentley	$628,000
LS	4D Dynamics of Epigenome Regulation in Response to Environmental Challenges	Colmenares,Serafin U	$425,000
LS	Modeling Desert Soil Crust Microbial Community Response to Pulsed Climate Events	Northen,Trent R	$188,000
LS	Development of Protein Localization Atlases at Multiple Scales in Eukaryotes	Sudar,Damir	$470,000
LS	A Graphene Based Platform for Correlative Electron and Super-Resolution Microscopy	Ke Xu	$148,000
MS	Search and Synthesis of the Next Generation of Topological Insulators	Analitis,James	$202,000
MS	Responsive Nanoparticle Assemblies	Helms,Brett	$325,000
MS	Dynamics of Mesoscale Electronic Ordering in Complex Materials	Schoenlein,Robert William	$611,000
MS	Exciton Visualization and Engineering in Organic Materials for Energy Conversion	Weber-Bargioni,Alexander	$253,000
MS	Rational Design Approach to the Formation of Hybrid Framework Materials	Yaghi,Omar	$392,000
NE	Integrated Tools for Next Generation Bioimaging (NGBI)	Skinner,David E	$365,000
NE	Codesigning Big Iron for Big Data	Wright,Nicholas James	$371,000
NS	Toward Laser Spectroscopy of Transfermium Elements	Gates,Jacklyn M	$204,000
NS	Simulating Astrophysical Explosions through High Performance Computing	Kasen,Daniel	$233,000
NS	Next Generation Si-based Tracking and Massive Online Data Processing for Collider Experiments	Ploskon,Mateusz Andrzej	$227,000
PB	Probing Dynamics of Electron Transfer for Microbial-based Energy Interconversion	Ajo-Franklin,Caroline	$246,000
PB	Functional Genomic Encyclopedia of Bacteria and Archaea: Evidence-Based Annotation of the Microbial Tree of Life	Deutschbauer,Adam M	$346,000
PB	Enhancing the Design-Build-Test-Learn Cycle for Metabolic Engineering	Hillson,Nathan J	$838,000
PB	Simultaneous INverse Beam Anomalous Diffraction (SINBAD)	Holton,James M	$148,000
PB	Optimizing Plant-microbe Interactions for Sustainable Supply of Nitrogen for Bioenergy Crops	Loque,Dominique	$344,000
PB	Synchrotron X-Ray Footprinting: A Step Beyond Standard Structural Techniques in Revealing Protein Interactions and Dynamics	Ralston,Corie	$144,000
PB	Computational Methods for X-ray Free-Electron Laser Studies of Solar Energy Converting Biocomplexes	Sauter,Nicholas K	$107,000
PH	Tactical High Throughput Computing: Improving interdisciplinary Tools for High Throughput Computing at NERSC and Beyond	Bailey,Stephen	$153,000
PH	Higher Performance CCDs for Next Generation Dark Energy Experiments	Bebek,Christopher	$262,000
PH	New Monolithic CMOS Sensors on a Fully Isolated Substrate (2nd Year Request)	Garcia-Sciveres,Maurice	$216,000
PH	Advanced Composites for Next Generation Scientific Instruments	Haber,Carl H	$397,000
PH	Next Generation Cosmic Microwave Background Detector Arrays: Enabling a Factor 10-100 Increase in Array Size	Lee,Adrian Tae-Jin	$257,000
PH	Transforming Infrared Astronomy with Nanostructured IR Filters	Perlmutter,Saul	$234,000